

Musealisation at home – my own way to comply with museologic standards

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Abstract

This short paper is meant both as a specific reference procedure for the future maintenance of the author's collection of *Oliva* shells, and as an example for anybody interested in applying consistently a similar procedure to his own collection of biological or non-biological specimens. In particular, this paper will illustrate the successive steps that the author takes to get from a freshly bought specimen such as the one illustrated in Fig. 1, to a properly musealized specimen like the one illustrated in Fig. 2, stored in drawers similar to what is shown in Fig. 3. Those steps include the update of an offline database (an Excel spreadsheet) and an online photographic catalogue a screenshot from which appears in Fig. 4.



Figure 1 – An *Oliva* shell as received from the seller



Figure 3 – One of the special storage drawers from the author's collection



Figure 2 – The same shell stored in its own cell with a standard label for its key data and its unique identification number on a 10mm x 5mm label pinned to the cell bottom

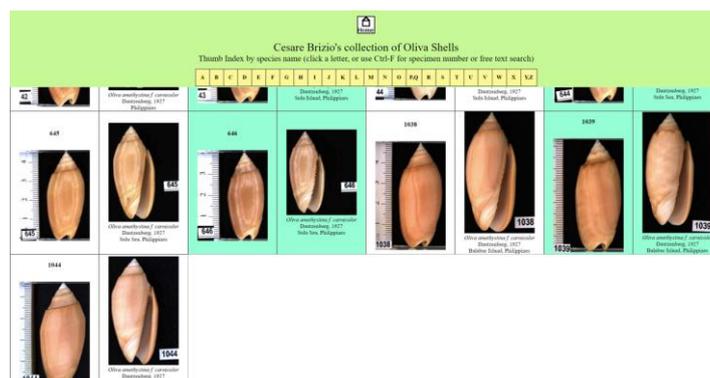


Figure 4 – A screenshot from the online catalogue of the author's collection

Introduction

Thanks to the competent advise of some internationally renowned seashell collectors, the author was able to adopt proper scientific standards for his own collection of *Oliva* shells since its inception: even when the number of specimens was very low, the stage was set for the author to adopt of proper museologic standards.

They included self-built dedicated storage cabinets, whose description has been available on the author's Web pages since 2013 (Brizio, 2013 and Brizio, 2019) and, more recently, the adoption of a standard procedure to photograph the specimens (Brizio, 2019a).

Most importantly, the author adopted a storage based on open, multi-cell drawers where several related specimens could be stored side by side, thus providing at a glance an impression of interspecific and intraspecific diversity. Inserting new specimens in such an arrangement, that proved very effective as a didactical tool, requires many more steps than, to say one, the storage of sealed bags into closed boxes.

Yet, in a general sense, most of the challenges of scientific cataloguing are the same regardless of the storage strategy, and this paper may provide an useful summary also to those who prefer a simpler way to stow their collections.

It should be remembered that the workload needed to comply with demanding standards, also provides a way to keep a tight rein on compulsive hoarding – anybody of sound mind would think twice before making a big purchase of an high number of specimens, if the time needed to insert them in the collection would amount to full days of work...

On the other hand, any collector who does not keep any catalogue and stores unorderly his/her specimens, is much more prone to compulsive purchasing because growing the collection becomes incredibly easy - it suffices to buy shells. Unfortunately, such an undocumented collection is no more than an accumulation, and may prove useless from the scientific point of view.

Materials and methods

To understand the steps that will be illustrated herein, it's necessary to provide a list of the physical and logical items on which specimen registration and storage are based. Some of them are visible in Figure 2 and Figure 3.

An exhaustive list includes:

- one or more trays for handling the specimens during the registration process;
- the specimens themselves;
- the original labels (if any) provided by the seller or by the collector himself/herself for self-collected specimens;
- several software items, including:
 - a word processing software (in the author's case, Microsoft Word 2010);
 - unless handwriting is preferred, a word processing template to fill and print the standard labels;
 - unless pre-printed or handwritten numbered labels are used, a word processing template for the 10mmx5mm numbers;
 - unless an handwritten paper register is kept, a database software or a digital spreadsheet (in the author's case, Microsoft Excel 2010);
 - an image capture software (or a self-contained camera);
 - an image editing software;
- the database entry for the specimen (the specific data, input or handwritten in the database / paper register);
- the template entry for the specimen's standard label (the specific data, input or handwritten on the standard label). In case that the database/spreadsheet can automatically generate a standard label for each specimen, a separate "standard label preparation" phase may not be needed;
- unless pre-printed or handwritten numbered labels are used, the template entry for the specimen's number;
- the physical standard label printed / handwritten for the specimen;

- the physical number label printed/handwritten for the specimen;
- one small sealed bag for each specimen;
- a pin for each number label;
- the tools and materials (toothpicks, cotton swabs) needed for cleaning the specimen;
- the tools (such as tweezers) needed to handle the labels;
- the tools needed to extract the coating and the padding from the drawers' cells.

In the case of the author, the small number labels are printed on thin cardboard beforehand in hundreds of progressive numbers, as a part of a table, as in the following example:

1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045
1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064
1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083

In that respect, one doesn't need to access the relevant template and input the number assigned to the specimen, but rather it suffices to cut a suitable number of numbered labels from the previously printed number list.

Furthermore, the following items come into play, but won't be discussed here considering their infrastructural nature, and the fact that they are exhaustively described in the references cited above:

- a storage cabinet;
- a storage drawer;
- a storage cell, with bottom padding and bottom coating;
- an imaging device (in the author's case, a video camera with a photographic objective);
- a photographic stand;
- a suitable lighting equipment;
- suitable tools (brushes, vacuum cleaners) needed to clean the surface of the photographic stand.

Table 1 includes a step-by-step commented list describing the successive phases of registration and orderly storage presently used by the author. The procedure is consistently applied whenever one or more new specimens are added to the collection. Usually, it's less time-consuming to accumulate a suitable number of specimens covering a few hours of work (e.g. 15 or 20 specimens) and treat them in sequence, than treating just in time smaller lots or single specimens.

Results

The estimate here provided is based on the indicative times provided in Table 1, and on a quasi-optimal real case study described as follows:

- lot of 20 specimens;
- 2 specimens (10%) incorrectly identified by the seller and requiring to check both the identification and the possible provenance;
- reasonable upload times (one minute) of the online catalogue;
- quick cleaning (one minute per specimen);
- to provide space for the new entries, all the specimens of three small-sized species needed to be moved to a new drawers. Considering the small size of the specimens, the cells in the new drawer needed further padding as illustrated in Brizio, 2018, so the drawer setup phase was far from immediate.

Actually, such a lot required a total time of around 5 (five) hours, corresponding to around 15 (fifteen) minutes per specimen, to be inserted in the collection compliant with its current museologic standard. The measured time is in good accordance with the indicative times shown in Table 1.

Obviously, such times may vary depending on lot size, storage strategy (e.g. if small sealed bags and boxes are used, drawer setup and cell preparation do not apply), ease of identification of the specimen, degree of cleanliness of the specimen and the other variable factors cited in the text and in Table 1.

Conclusions

The value added to any specimen, as well as to the collection as a whole, by the respect of stringent standards is inestimable.

The repeated handling of the specimens during the phases described above, as well as their placement in dedicated drawers side by side with similar or dissimilar species, provides an opportunity to increase one's knowledge of both his/her collection and the natural group in which the specimens belong.

Obviously, one can conceive different and even more exacting standards, as well as different strategies for the storage of the specimens that on the contrary may simplify the workflow (e.g. many do not maintain an online catalogue, and seem to prefer keeping constantly the specimen in sealed bags, without using compartmented drawers allowing the simultaneous sight of related specimens): whichever the choices, consistency is of paramount importance, and a written, step by step procedure such as the one proposed here may help in saving time and in optimizing the cost-effectiveness of the collection-related activities.

Online bibliography

- Brizio C., 2013, "Olivarium: a story of passion, plywood and perseverance" - <http://www.cesarebrizio.it/Olivarium/Olivarium.html> [Recovered online on 24 September 2020]
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- Brizio C., 2019a, "Quick, massive (~1,000 items), manual digital photography of small (~1/10cm) specimens collection by a professional digital video camera and a photo camera zoom lens". *The Festivus*, 51: 150-163 - http://www.cesarebrizio.it/Brizio_The_Festivus_51_2_May_2019.pdf [Recovered online on 24 September 2020]

Phase	Sub-phase	Activity	Time		Notes	
			1 specimen	Case study (20 specs).		
Number assignment	Counting	Count the number of specimens to insert in the collection	negligible	negligible		
	Prepare the number labels	Cut the required number of numbered labels from the cardboard sheet	5"	100"		
	Assign a number to each specimen	Put a numbered label next to each specimen	5"	100"		
		Put the specimen and its number in the same sealed bag	10"	200"	If the specimens were purchased in separate bags, the bags provided with the specimens may be used	
Species and locality identification	Checking and validating the label	Validate the identification by comparison with credited sources. If a label is provided with the specimen, start with the identification provided by the seller	1' – 5'	1680"		
		Validate the collection locality by checking it against the actual distribution of the species. If consistent, accept the proposed locality – otherwise, mark locality as "To be determined" and assign to a general area (for species with limited geographical range) or leave blank for widespread species.	30" – 300"	1140"	Time needed may vary greatly, depending on the If needed, the relevant data may be temporarily hand-written on a temporary label	
	Check the author	Ascertain the proper attribution of the species to author and year	1'	1200"		
Data Entry	Access the database	Open the database or spreadsheet	negligible	negligible	In case a paper register is used, this step equates to opening it	
	Enter the data	For each specimen, enter the data	1'	1200"	Minimal dataset includes species and subspecies (if any), author, and collection locality.	
	Update the statistics	If a pivot table or other similar report is attached to the spreadsheet / database, run it or update it as needed to take into account also the new specimens.	negligible	negligible		
Standard label preparation and assignment	Access the template	Open the template with empty standard labels	negligible	negligible	This whole phase may be omitted if the database/spreadsheet software generates the standard labels based on the new lines just input.	
	Fill the template	For each new line recorded in the database/spreadsheet, fill one new label	40"	800"		
	Print the labels	Print the labels on thin cardboard	Overall, 1'	60"	Obviously, if pre-cut standard labels are used, there may be no need to cut them manually	
	Prepare the label	Cut the labels		10"	200"	A precaution needed particularly when one is inserting specimens of the same species from different locations.
		Write specimen number on the back of the label		10"	200"	
	Put the label in the bag with the specimen		10"	200"		
Cleaning	General cleaning	Gently brush each specimen	10"	200"	This phase may take place anytime before photography, it could well be the first step in the process.	
	Detailed cleaning	Prepare water and small amounts of soap as needed	Overall, 1'	60"		
		Prepare small tools (toothpicks, cotton swabs)				
		Clean				
		Dry with soft paper				
	Check under the lens, repeat cleaning if needed	1' – 2'	1200"			
Photography	Setup	Prepare the stand and the lighting	Overall, 3'	180"		
	Photo cycle for each specimen	See Brizio, 2019a – the specimen should be photographed on apertural and abapertural sides, with at least one photo including a millimetre ruler, and with the number label visible in each photo	2'	2400"	Under the eye of the camera, imperfect cleaning may be revealed, and require another cleaning cycle.	
Image post-production	Editing and improvement	Auto levels	1'	1200"	here is a list of the main post-production activities, for an extensive explanation see Brizio, 2019a. The author performs those activities under Photoshop Elements 4 software	
		Lighting adjustment				
		Image rotation				
		Image crop				
		Image resize (if needed to limit storage space)				

Phase	Sub-phase	Activity	Time		Notes
			1 specimen	Case study (20 specs).	
Online publication	Image preparation	Generate thumbnails	Overall, 1' – 2'	60"	
		Store in appropriate folders	negligible	negligible	
	Index page update	Access index page via content management system or text editor	negligible	negligible	
		Add one entry with the data and the link to both the views of each specimen and input its locality data	1'	1200"	
		If the index page includes statistical data from the spreadsheet / database, update those data.	Overall, 1'	60"	
	Upload	Image & Thumbnails upload	Overall, 1' – 2'	60"	Time may vary depending on the available upload speed
Index page upload		negligible	negligible		
Index page test	Check the text and the image links for the specimen	30"	600"	May be performed offline before upload	
Final storage	Cabinet and Drawers setup	Check the available space in the relevant drawers against the number of specimens that will be added to the collection	Overall, 1' – 2'	120"	
		Rearrange if needed to ensure that an adequate number of cells are available in the relevant drawers	Variable	1800"	If deep reorganising is needed, this step may take one or more hours. In the case study, three small species needed to be moved to an empty drawer (requiring further cell padding) to provide space for the new entries.
	Cell preparation	Extract padding and coating from the bottom of the cell	negligible	negligible	As an alternative, one may add another smaller number label inside the specimen, or write with special ink the number into the lip of the specimen. I refrained from altering the specimen in any way, and feel that the numbered pictures obtained earlier may solve doubts such as those generated by the involuntary swap of cells among specimens
		Pin the label to the bottom left corner of the coating/padding	10"	200"	
		Reposition the coating/padding	5"	100"	
		Insert the standard label at the left side of the cell	10"	200"	
		Fold the original label and place it behind the standard label	10"	200"	
	Specimen insertion	If the specimen is much smaller than the cell, pad the cell with suitable material, as illustrated in Brizio, 2018	20"	100"	In the case study, 4 specimens needed padding
		Place the specimen into the cell	5"	100"	
	Update storage list	If rearrangements between different drawers occurred, or if a new species has entered the collection, if a general index of the drawers (Species/drawer) index is available, it should be updated accordingly.	Overall, 2'	120"	
Total (seconds) for the case study scenario				17240"	4h47'20"
Seconds per specimen (20 specimens)				862"	14'22"

Table 1 – The registration and storage process. The “Case Study (20 specs.)” column refers to the conditions listed in the “Results” section